Capability Maturity Model Integration (CMMI)

EIA Standard 731

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U.S. Army Aviation and Missile Command

NDIA TID Technical Information Division Symposium
Royal Sonesta Hotel, New Orleans, LA

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Agenda

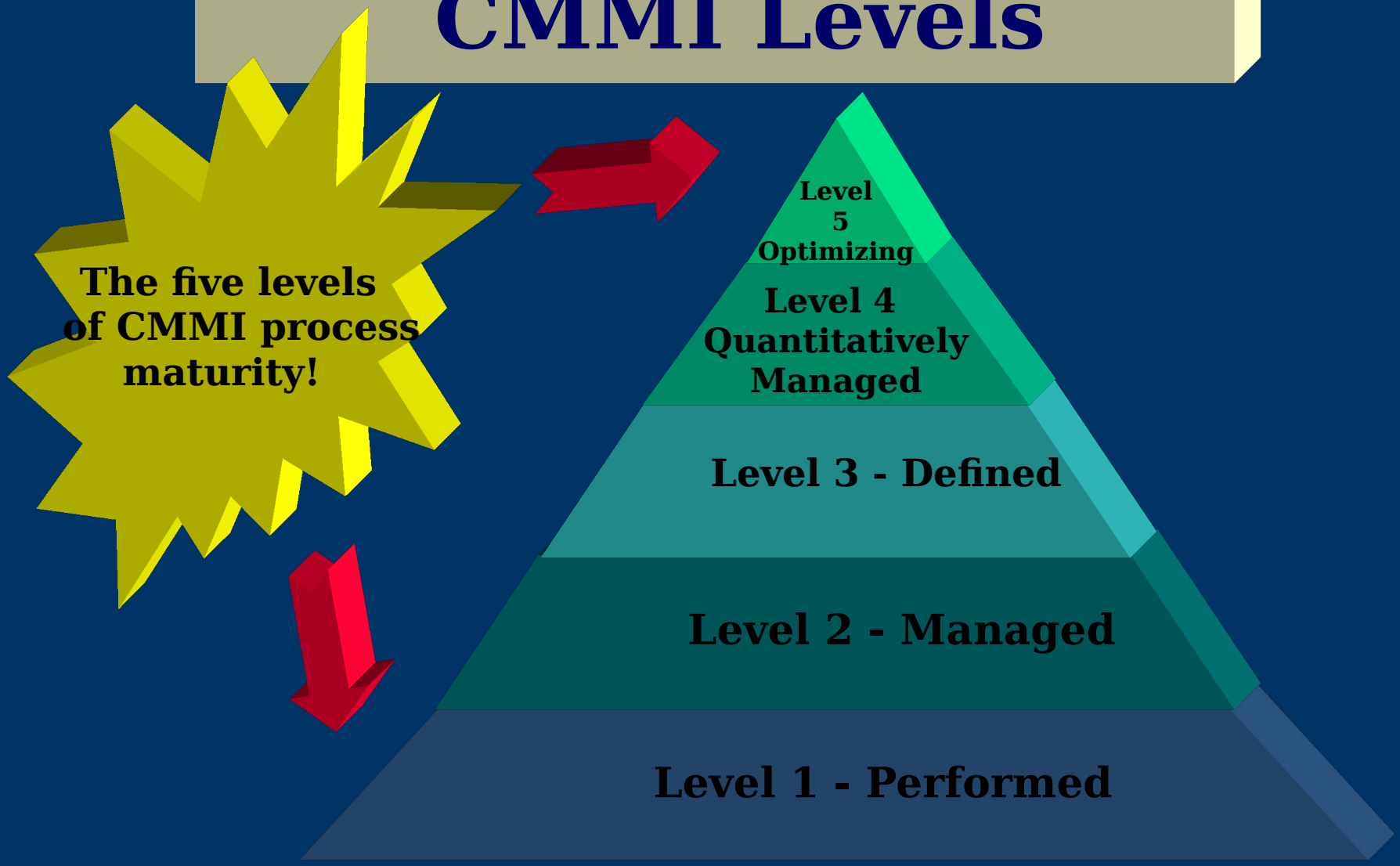
- **What is CMMI?**
- **What is required to achieve CMMI?**
- **Relating CMMI and EIA 859!**

What is CMMI?

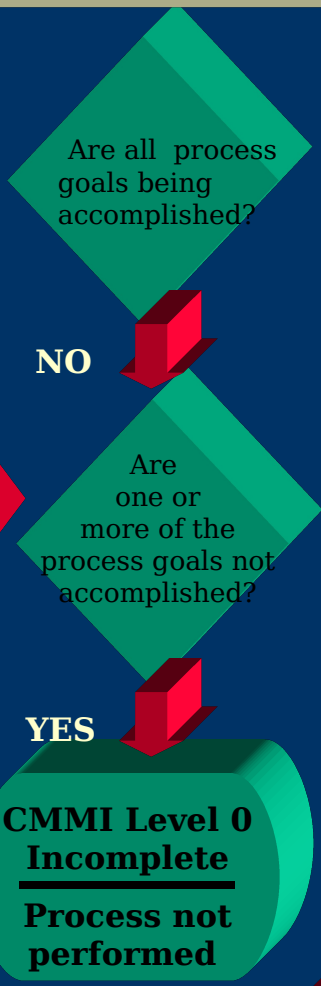
Defines 5 levels of process maturity
Describes model framework to be used for:
Assessing process maturity
Determining priorities
Instituting process improvement

Capability Maturity Model Integration CMMI

CMMI Levels


The five levels of CMMI process maturity!
Level 5 Optimizing
Level 4 Quantitatively Managed
Level 3 - Defined
Level 2 - Managed
Level 1 - Performed
Level 0 - Incomplete

At what CMMI Level are we performing?


Are all process goals being accomplished?
NO
Are one or more of the process goals not accomplished?
YES
CMMI Level 0 Incomplete
Process not performed

Review data

management procedures to determine CMMI Level

- Are Data Management requirements being met?
- Are all customers identified?
- Are all customer requirements identified?
- Are customer requirements being met?

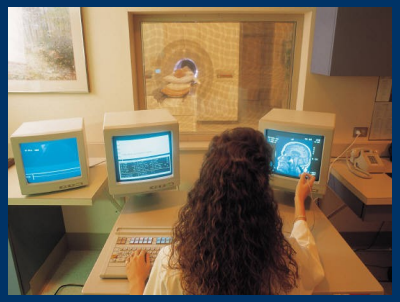
Performing at CMMI Level 0

How do we achieve Level 1?

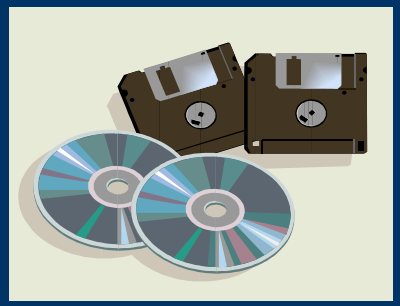
Identify your customers

Identify customers needs

Identify management process goals



Develop steps to produce the desired work products



Identify work products

What is CMMI Level 1?

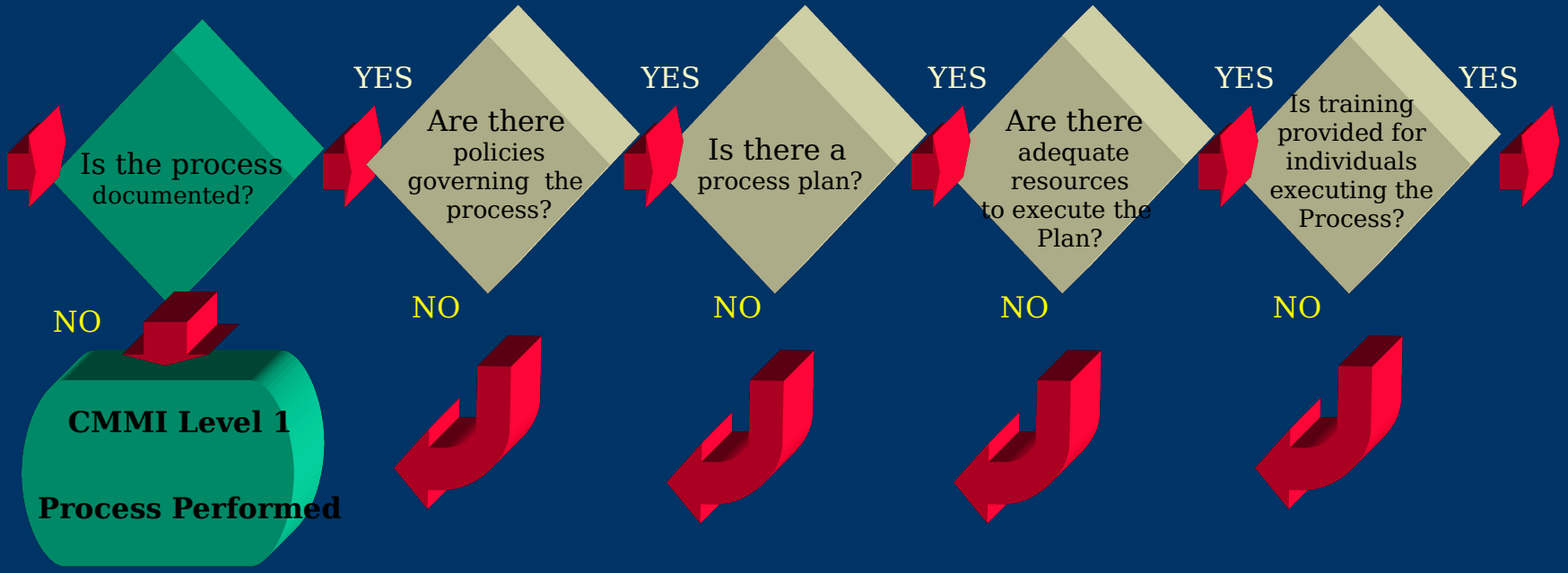
- Specific goals are being accomplished
- No defined processes
- Individuals may follow differing procedures
- Using general purpose tools

CMMI Level 1

Characteristics

- Dependent on individuals
- Results vary
- Resources vary
- Results unpredictable
- Practices are informal
- Quality inconsistent

Determining the CMMI Level



Performing at CMMI Level 1

EIA 859

Includes 9 high level Data Management Principles

Principles address functions of Data Management

Describes fundamental concepts to be considered when structuring a Data Management process

EIA Standard 859

Industry Standard for Data Management

DRAFT

EIA 859 Principles

EIA Standard 859

Industry Standard for Data Management

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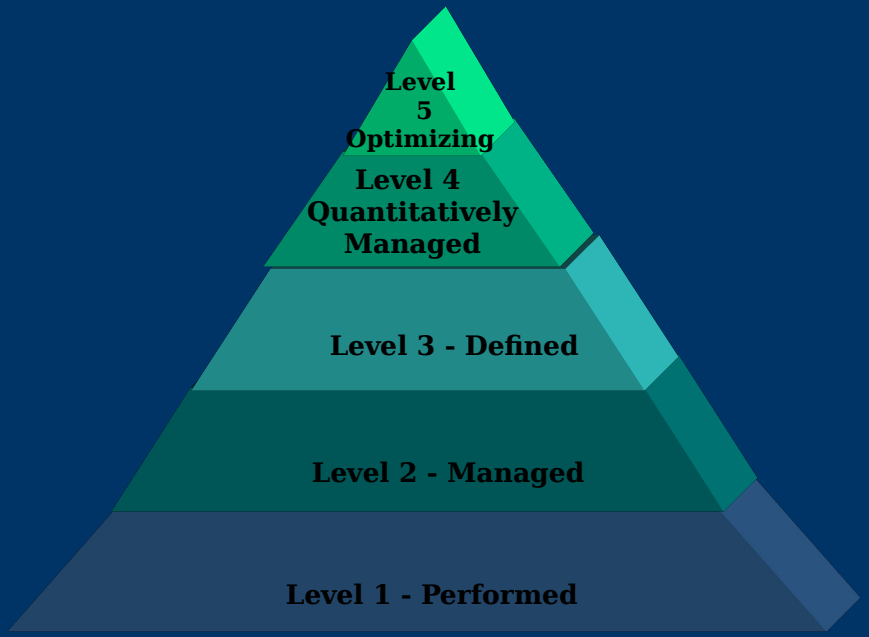
Principles

1. Define the organizationally-relevant scope of Data Management
2. Plan for, acquire, and provide data responsive to customer requirements
3. Develop DM processes to fit the context and business environment in which they will be performed.
4. Identify data products and views so their requirements and attributes can be controlled.
5. Control data repositories, data products, data views, and meta data using approved change control process.
6. Establish and maintain an

CMMI & EIA 859

CMMI



EIA 859

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5. Control data repositories, data products, data views, and meta data using approved change control process.
6. Establish and maintain an identification process for intellectual property, proprietary, and competition-sensitive data.
7. Retain data commensurate with value.
8. Continuously improve data management.
9. Effectively integrate data management and knowledge management.

Advocates Repeatable Processes
Project Level
&
Enterprise Level

Relating CMMI & EIA 859

EIA Standard 859

Industry Standard for Data Management

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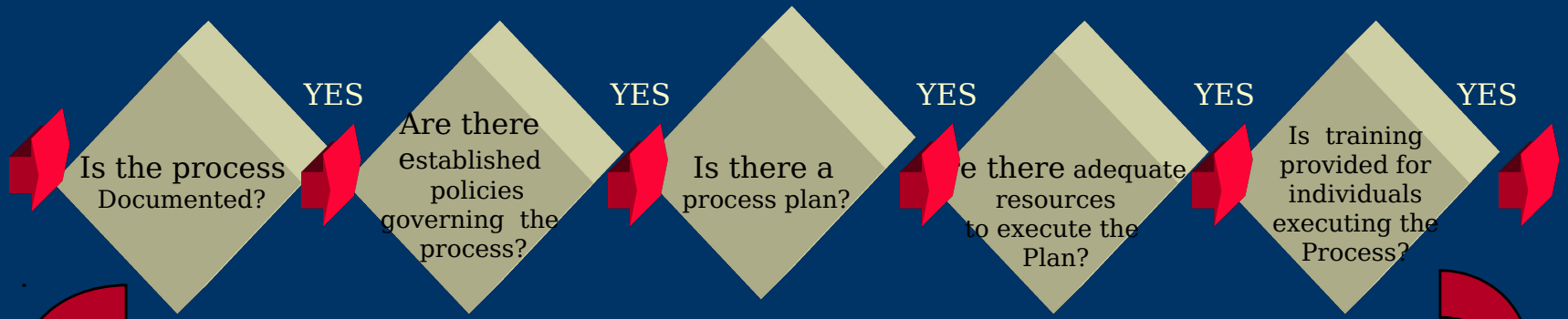
CMMI Level 2

- **Planned and executed IAW policy/procedures**
- **Established objectives**
- **Adequate resources**
- **Applicable to a particular group/project**

CMMI Level 2



CMMI

Level 2

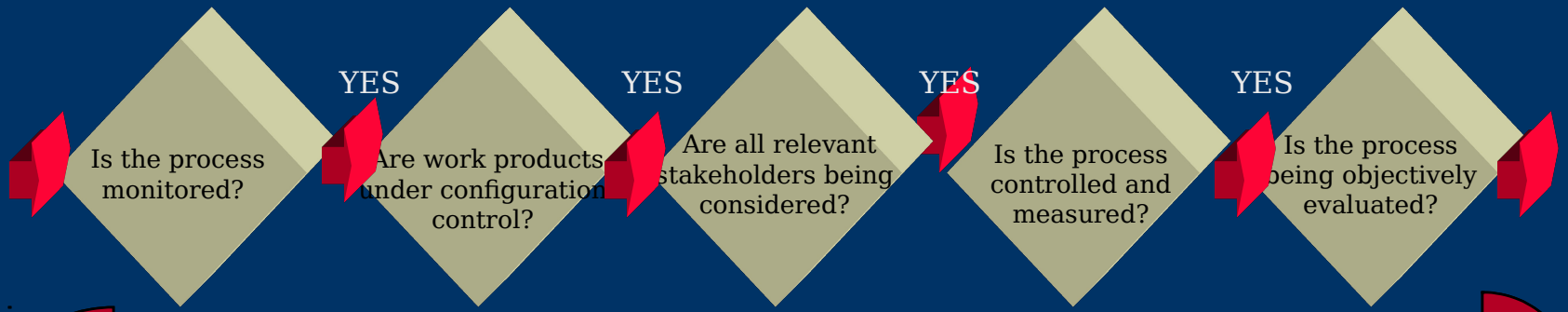
Develop policies for process execution based on organizational requirements and customer needs.
Develop standards for work products and services.
Identify stakeholders.
Define process dependencies and work products and services.
Define resource requirements (funding, people etc.)
Define work products requiring configuration control.
Define process measurement requirements to determine process performance.

EIA 859

Principle 3

Develop DM processes to fit the context and business environment in which they will be performed.
Determine related organizational policies.
Identify external forces.
Determine related business objectives.
Determine requirements for access and delivery.
Determine who will create, access, update, and dispose of the data.

mparing CMMI Level 2 & EIA 85



CMMI

Level 2

Evaluate the effect of deviations from the process plans and descriptions.

Review accomplishments against process plans and descriptions.

Place the process work products under configuration management.

Coordinate the process plan and description with relevant stake-holders.

Monitor and control the process.

Assign responsibility and authority for performing the process.

Obtain the necessary resources.

EIA 859

Principle 3

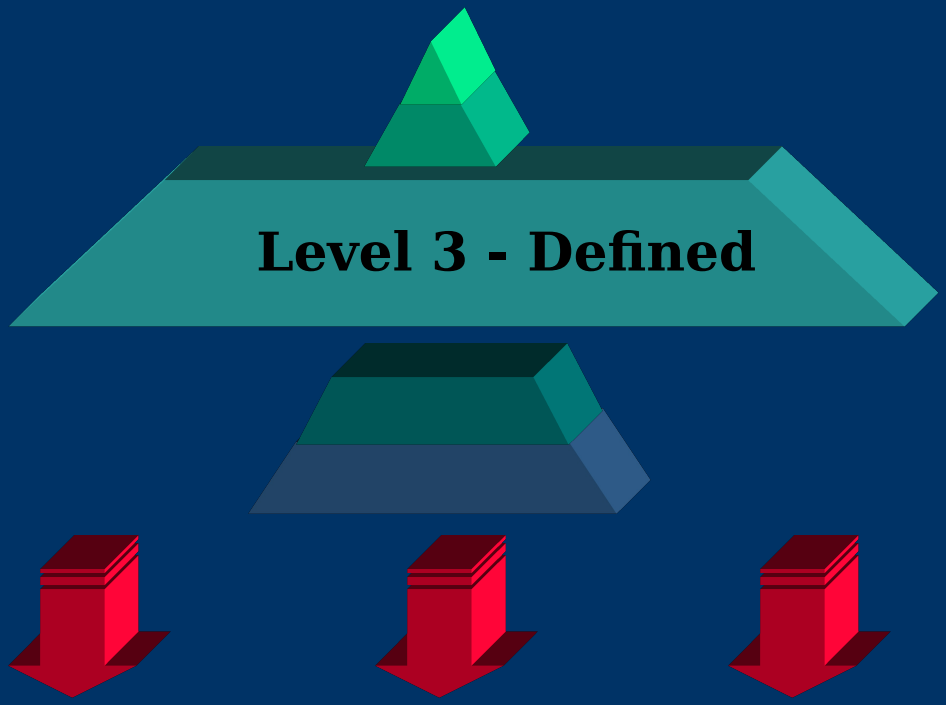
Make needed adjustments in processes, practices, policy, organizational alignment and infrastructure.

Control the integrity of data, data elements, data structures and data views.

Establish a change control process that imposes the appropriate level of review and approval.

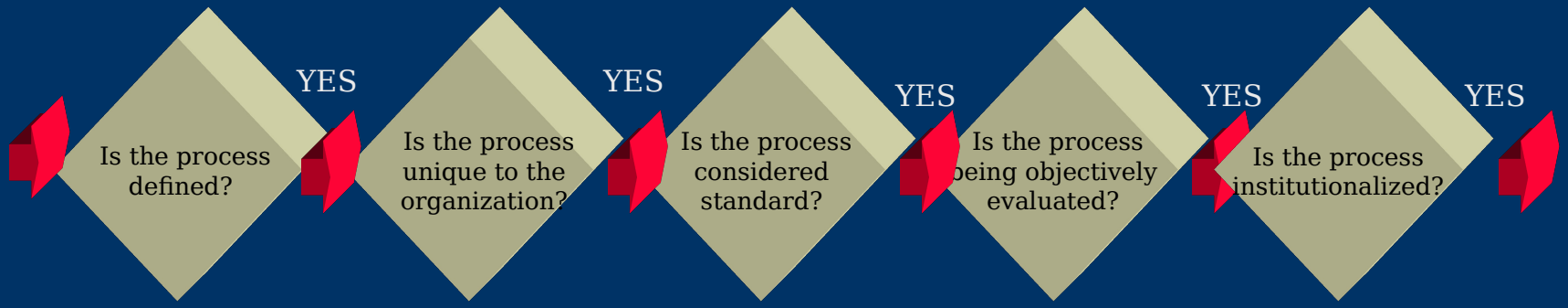
Establish mechanisms for tracking and determining status of data.

CMMI Level 3



- **Process institutionalized**
- **Process consistent across the organization**
- **Process measurable**

CMMI Level 3

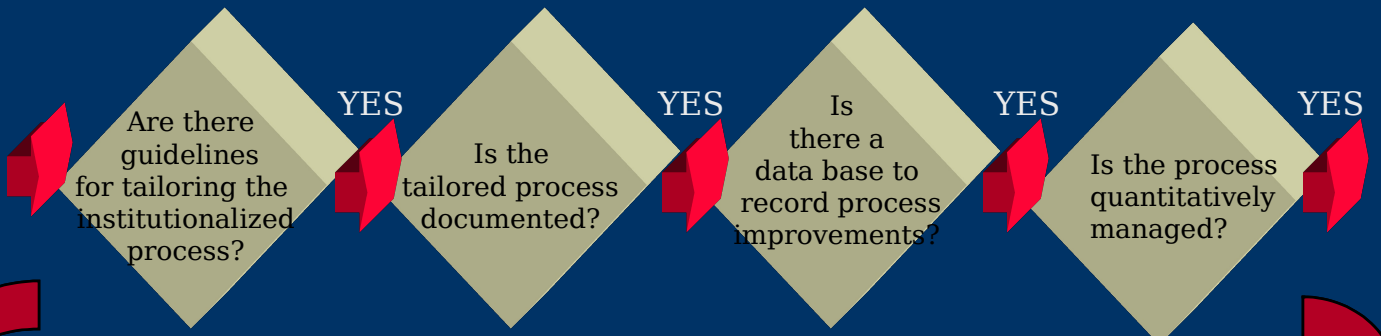


CMMI

Level 3

Define process steps for institutionalization.
Define policy/guidelines for tailoring process steps.
Define process tailoring.
Document process tailoring.
Collect and document work process/product measurement results.
Develop and maintain a data base for process/product measurement information.
Document and store lessons learned in the data base.

CMMI Level 3



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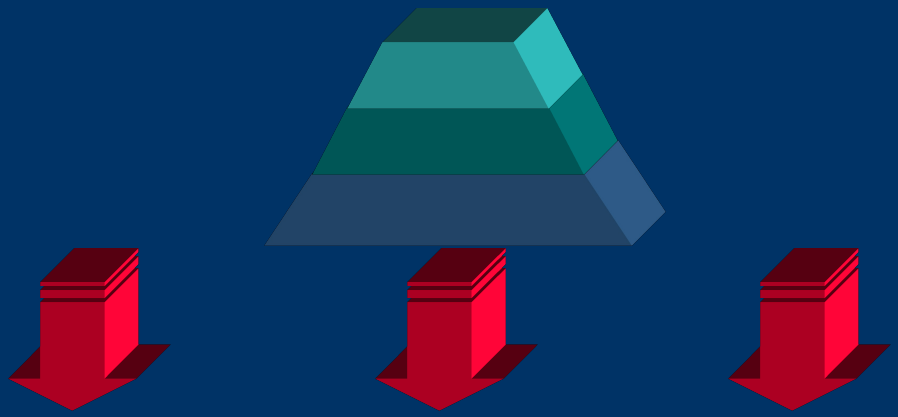
Principle 8

Establish and maintain a metric process and reporting strategy.

Establish the necessary tools and infrastructure to support the process and assess the results.

CMMI Level 4



- **Controlled using statistical and other techniques**
- **Process variation identified**

CMMI Level 4

CMMI
Level 4

Determine an understanding of ability of the process to achieve the quantitative objectives.
Determine objectives for statist control.
Identify and measure the sub- process determined to be unde statistical control.
Identify and measure process a product attributes important to quality and process performanc
Identify causes for process varia
Manage processes to attain stat stability and predictability.

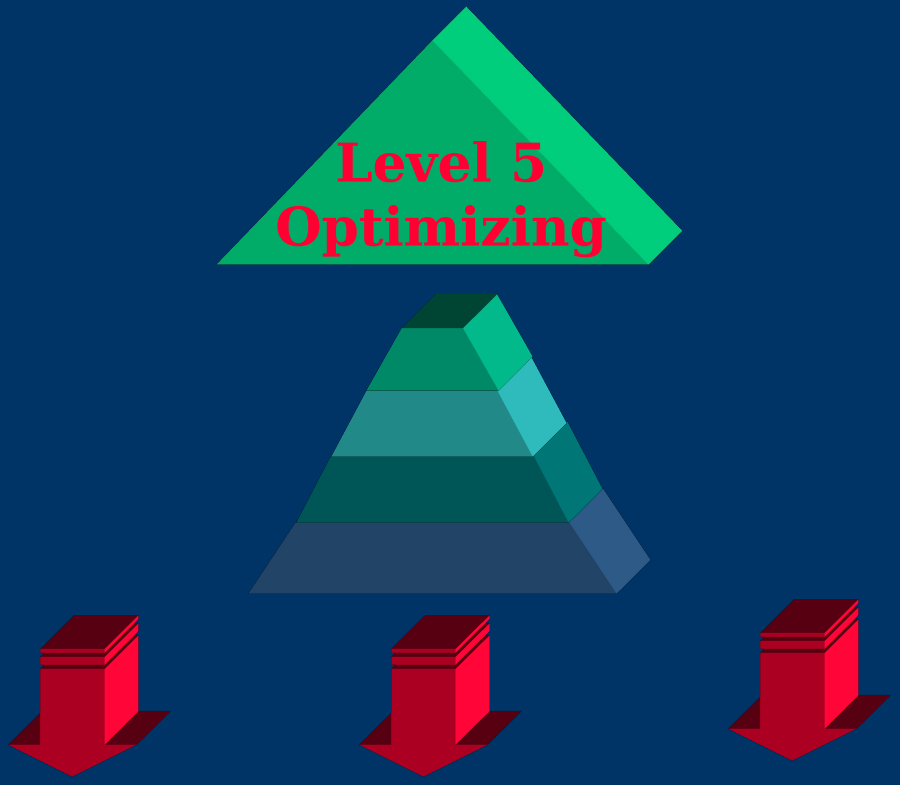
CMMI
Level 4

Predict the ability of the process to achieve performance objectives using managed statistical data.
Institutionalize process performance baselines.
Take appropriate action when desired quantitative and proce product performance objective are not being met.

EIA 859
Principle 8

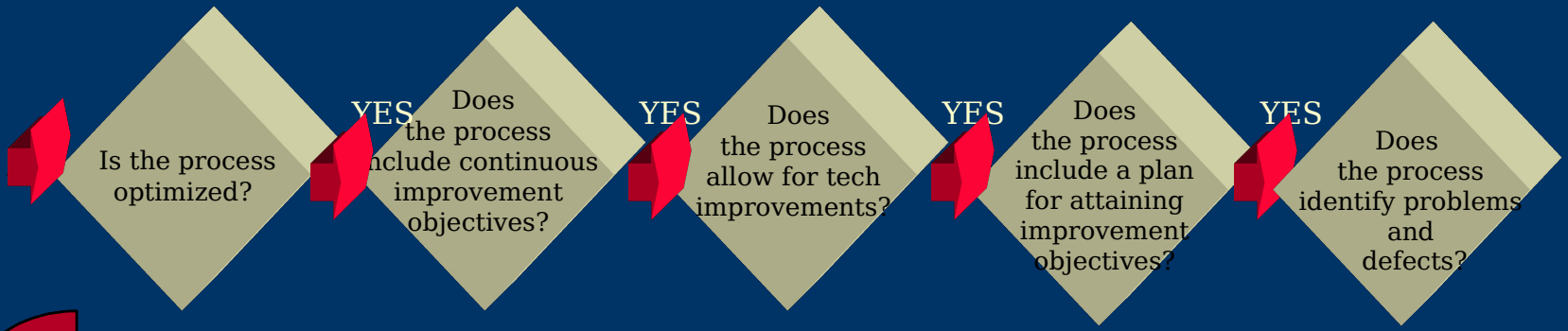
Recognize the need to continuously improve the quality of data resources.
Establish and maintain a metric process and reporting strategy.
Establish the necessary tools and infrastructure to support the process and assess the results.
Monitor the quality of data to improve data and processes.

CMMI Level 5



- Continuously improving performance
- Incremental improvement
- Technological improvement

Comparing CMMI Level 5 & EIA 859


Is the process optimized?
YES
Does the process include continuous improvement objectives?
YES
Does the process allow for tech improvements?
YES
Does the process include a plan for attaining improvement objectives?
YES
Does the process identify problems and defects?

CMMI

Level5

Develop and maintain process/ product improvement objectives.
Identify and implement tech- nelogical innovations for process/ product improvements.
Manage process/product improve- ment deployment.
Measure results against objectives.
Identify and correct process/ product defects.

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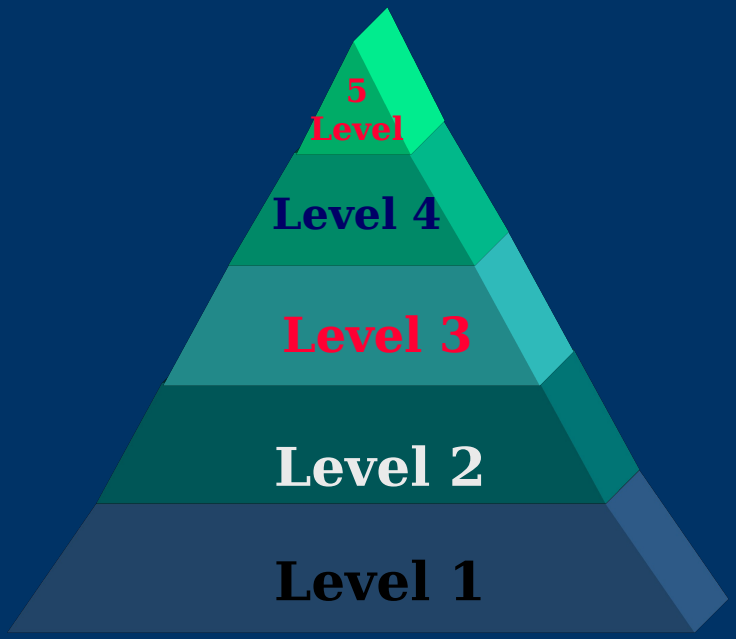
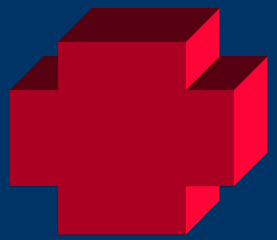
Principle 8

Recognize the need to continuously improve the quality of data resources.
Implement a strategy for on-going improvement.
Improve Data Management through a systematic and self- diagnostic process..
Identify objective evidence of improvements.

Summary





EIA Standard 859

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for
Data Management

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CMMI

Data Managemen

Summary

- CMMI is the measurement of organizational capa
- CMMI can be utilized for Data Management proc development/improvement!
- CMMI concepts are being included in EIA 859!
- ?????????